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SUGGESTIONS

FOR FORMING

COLLECTIONS OF BIRDS' EGGS.

By ALFRED NEWTON, M.A.,

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PREFACE.

A FEW months since, at the request of Professor Spencer F. Baird, Assistant-Secretary to the Smithsonian Institution of Washington, I wrote the following 'Suggestions' for circulation among its correspondents, and accordingly upwards of three thousand copies of them have been so distributed in the United States. I have thought that a republication of the pamphlet in England, with some slight alterations, would be a matter of convenience to British Oologists, many of whom, I believe, have felt the hitherto-existing want of a concise set of directions on the subject of egg-collecting, for transmission to their friends at home or abroad.

I have had the less hesitation in offering these 'Suggestions' to the Ornithological public, because I know that the principle of taking much greater care than is ordinarily done with respect to the proper identification and authentication of eggs, on which principle I have endeavoured most to to dwell, is that which was so thoroughly and so successfully maintained by my late friend Mr. John Wolley. To his example, indeed, I would chiefly attribute whatever merit might be found in these pages, though several hints which I cannot but consider valuable have been kindly supplied to me from other sources. I only trust that the subject has not suffered from its treatment at my hands, for I am fully convinced that the study of Natural History will be much benefited by an extended knowledge of Oology. But that it may be so benefited it is of the utmost importance that our knowledge of Oology should rest on a firm and truthful basis, and this end can only be attained by unremitting caution and scrupulousness on the part of egg-collectors.

Elveden, Thetford,
July 11, 1860.

SUGGESTIONS, &c.

§ I.

GENERAL REMARKS.

The collecting of bird's eggs for scientific purposes requires far more discrimination than the collecting of specimens in almost any other branch of Natural History. While the Botanist, and generally speaking the Zoologist, at home is satisfied as long as he receives the specimens in good condition, with labels attached giving a few concise particulars of when and where they were obtained, it should be always borne in mind that to the Oologist such facts, and even the specimens themselves, are of very slight value unless accompanied by a statement of other circumstances which will carry conviction that the species to which the eggs belong has been accurately identified, and the specimens subsequently carefully authenticated. Consequently precision in the identification of his specimens should be the principal object of an egg-collector, to attain which all others must give way. There are perhaps few districts in the world, and certainly no regions of any extent, whose faunas are so well known that the most rigid identification may be dispensed with. Next to identifying his specimens, the most important duty of an egg-collector is to authenticate them by marking them in some manner and on some regular system as will leave no doubt, as long as they exist, of their having been obtained by him, and of the degree of identification to which they were subjected. Neatness in the mode of emptying the shells of their contents and other similar matters are much to be commended; they render the specimens more fitted for the cabinet. But the main points to be attended to, as being those by which science can alone be benefited, are IDENTIFICATION and AUTHENTICATION.

§ II.

IDENTIFICATION.

The most satisfactory, and often the simplest, way of identifying the species to which a nest of eggs, when found, belongs, is to obtain

one of the parents by shooting, snaring or trapping. But it sometimes, in practice, happens that this is found to be difficult from one cause or another, such as the wary instincts of the birds, or the necessities of his position compelling the traveller to lose no time, or the scarcity of the species making him unwilling to destroy the individuals. In any of these cases there is nothing to be done but to make as careful an examination as circumstances will admit of the precise situation of the nest, the materials of which it is composed (supposing that the collector cannot bring it away with him), and accurately to survey the surrounding locality, to observe by what species it is frequented; all the particulars of which examination and survey should be fully noted down at the earliest opportunity possible. Should, however, either or both the birds be killed, they should be skinned, or at least some characteristic part of each preserved,* and duly labelled to correspond with the inscriptions subsequently put on the eggs, and always with a reference to the collector's journal or note-book, wherein fuller details may be found.

The Oologist is especially warned not to be misled by the mere fact of seeing birds around or near the nests. Many of the Crow family (*Corvidæ*) are great eaters of eggs, and mistakes are known to have originated from birds of that kind being seen near nests of which they were certainly not the owners. Others, such as the Titmice (*Paridæ*), though not plunderers, obtain their food by incessantly seeking it, even in the very localities where many species build. It often happens, also, that two different birds have their nests situated very close to one another; and if they be allied species the collector may be easily deceived. Thus, it has come to the writer's knowledge that the Dunlin (*Tringa alpina*) and the Purple Sandpiper (*Tringa maritima*) have have had their nests only a few feet apart. At first a pair of the latter only were seen, which by their actions betrayed their uneasiness. A short search discovered a nest with four eggs. The observer was one of the best practical Oologists then living, and his eye at once saw that it was not the nest which he wanted; but a less experienced man would doubtless have immediately concluded that he had found the eggs of the rarer species. Indeed it may, generally speaking, be said of most birds that whenever they have nests of their own they are

* Birds may be preserved entire by simply pouring (through a small funnel) a few drops of pyroligneous acid down their throats, and saturating the feathers, especially about the vent, with the same fluid; after leaving them to dry for an hour or so, they may be wrapped in paper and packed. This fact was kindly communicated to me by Mr. John Hancock, and I have since made successful trial of the plan.

also acquainted with those of their neighbours, which by their actions they will often betray to the collector who may be patiently watching them. Birds, again, will occasionally lay their eggs—accidentally, as it were—in the nests of other species, even when they are not, as the Old World Cuckoos (*Cuculus*, *Eudynamis* and *Oxylophus*) or the Cow Blackbird (*Molothrus pecoris*), of a parasitic nature; thus, eggs of the Eider Duck (*Somateria mollissima*) have been found in the nest of a Gull (*Larus*), and other similar cases are on record, in some of which, from the species being nearly allied, confusion might easily have arisen, though at the time no doubt may have occurred in the collector's mind.

It would be impossible in this paper to treat of the various methods which may be successfully employed to obtain the birds to whom a nest belongs, and, in fact, these methods can generally be only learned by experience. It is sufficient to indicate here the use of traps, snares, hingles or bird-lime, in cases where the individuals are too shy to admit of being shot by the gun or rifle. Much may often be gathered by the collector from the practice of the natives, especially if they be savages or half civilized. In like manner it would too much extend these suggestions to give a detailed account of the different ways in which the nests of birds are to be found. The experience of a single season is to most men worth a whole volume that might be written on the subject. Nevertheless, a few hints are given further on which might not occur to the beginner.

§ III.

AUTHENTICATION.

The most complete method of authenticating eggs is that of writing in ink on their shells,* not only the name of the species to which each belongs, but also, as far as the space will admit, as many particulars relating to the amount of identification to which the specimen was subjected, the locality where, date when, and name of the person

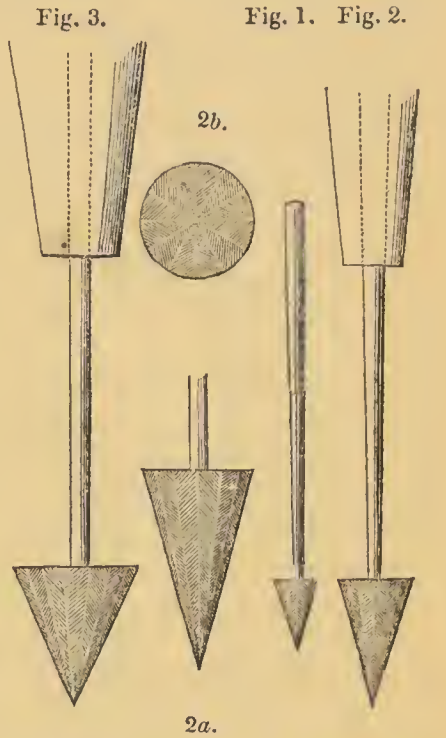
* A few possessors of egg-cabinets have a great aversion to specimens which have been written upon in the manner here recommended. With all deference to their example I cannot yield to what I am compelled to consider a prejudice, and a prejudice which may indirectly lead to very mischievous consequences. The neat and ingeniously-prepared tickets or labels which are used by many persons are not of themselves the slightest guarantee for the authenticity of the specimens to which they are affixed, as the process of removal and substitution is one of the easiest imaginable.

by whom they were taken, adding always a reference to the journal or note-book of the collector, wherein fuller details may be given. It is advisable to do this on some regular system, and the following method is suggested as one that has already been found to work well in practice. The scientific names only to be used, except with a mark of doubt or within brackets, when the specimens have really been satisfactorily identified; and if the identification has been made by obtaining one or both of the parent birds a memorandum of the fact to be added, thus: "Both birds snared," "Bird shot," or in smaller space, "Bd. st." If the identification has been effected only by obtaining a good view of the birds the fact should be stated thus: "Bird well seen," Bird seen," or "Bd. sn.," as the case may be. For eggs not taken by the collector himself, but brought in by natives, or persons not having a scientific knowledge of Ornithology, the local name or the name applied by the finder should only be used, unless, indeed, it requires interpretation, when the scientific name may be added, but always within brackets, thus: "Tooglee-aiah (*Squatarola helvetica*)," the necessary particulars relating to the capture and identification being added. Eggs found by the collector and not identified by him, but the origin of which he has reason to think he knows, may be inscribed with the common English name of the species to which he refers them; or if it has no such appellation then the scientific name may be used, but in that case always with a note of interrogation (?) after it, or else the words "Not identified." If the collector prefers it, many of these particulars may be inscribed symbolically or in short hand, but never unless the system used has previously been agreed upon with persons at home, and it be known that they have a key to it. Each specimen should bear an inscription; those from the same nest may be inscribed identically; but different nests, especially of the same or nearly allied species, should never be so marked that confusion can possibly arise. It is desirable to mark temporarily with a pencil each egg as it is obtained; but the permanent inscription, which should always be in ink, should be deferred until after the egg has been emptied. The number terminating the inscription in all cases referring to the entry in the collector's note-book, wherein full details will be found, and the words or letters preceding the number serving to distinguish between different collectors, no two of whom ought to employ the same. The initial letter of the collector's name prefixed to the number will often be sufficient.

§ IV.

DESCRIPTION OF EGG-BLOWING IMPLEMENTS.

Figs. 1, 2 and 3 represent "drills" for making neat and circular holes in the shell. These drills should be made of the best steel that can be procured, and of different sizes. Fig. 1 is meant for the smallest eggs, even Humming Birds', up to those say of a Song Thrush (*Turdus musicus*). The grooves forming the drilling surface should be cut with a chisel. Fig. 2 will suit the generality of eggs, excepting those of very large birds and sea-fowl, which usually lay eggs with a strong but soft shell. The grooves may be cut either with a chisel or a file, but if with the latter greater care will be requisite in its use. Fig. 3 is intended for the largest eggs, and even some of the smaller ones which have a chalky shell, such as *Crotophaga*. The grooves are cut with a file. In the manufacture of all these drills the greatest care is necessary that the grooves should lie parallel to one another, and that their edges should be smooth. The smaller the drill the more acute should be the angle it forms at the point. The drills may be fitted with handles or not according to fancy. Those with handles are less likely than the others to cramp the fingers of the performer, an inconvenience which often causes breakages.



Figs. 1, 2, 3, full size. 2*a*, 2*b*, enlarged.

A separate sketch is given with the enlarged views (figs. 2*a*, 2*b*) of the end of a drill,* in order to show more plainly the manner in which the grooves should be cut.

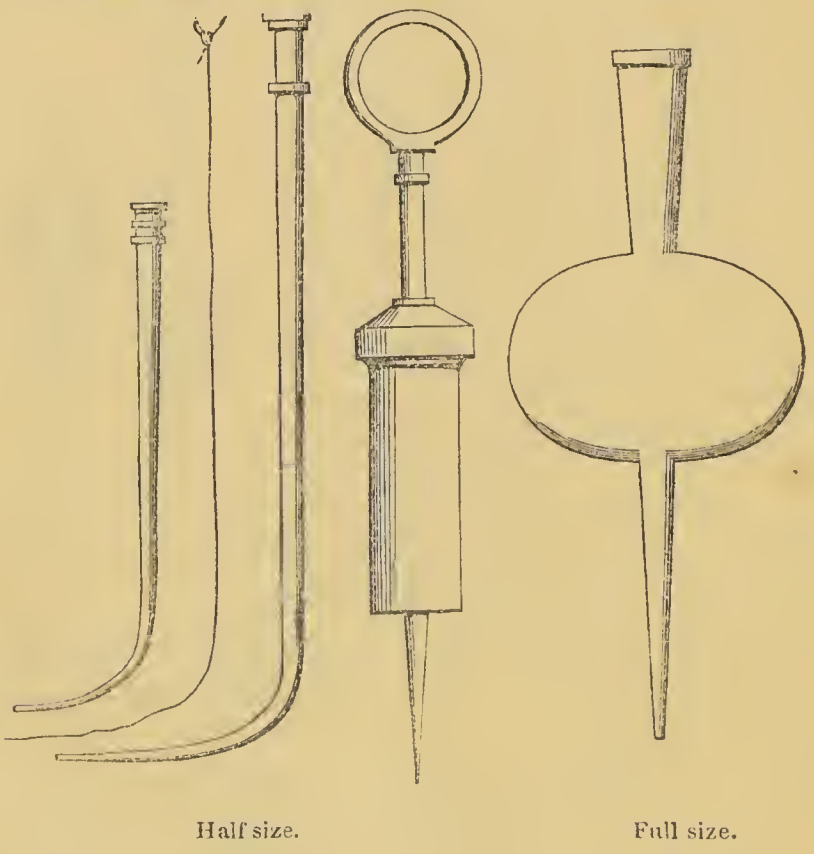
Figs. 4 and 5 represent blowpipes for emptying eggs. They are best made of metal, and for this purpose nickel (or German silver) is preferable, as being less liable to rust. A collector should have two sizes, as a large pipe is not convenient for small eggs, and a small one causes loss of time in blowing large eggs. They should be

* The great object to be attained is the formation of a circular hole with smooth edges. Collectors not having such a drill as is here recommended will find a common nail or a three-cornered needle a useful substitute, but either must be used with extreme care. A rat-tailed file sharpened to a point at the end is also an effective instrument, as I am kindly informed by the Rev. S. C. Malan, who prefers it to the drill recommended in the text.

be made as light as possible, or they may slip from the mouth and break the egg being operated on. The chief point to be attended to in their construction is that the lower orifice should be as large as the size of the pipe permits. It is of course necessary that they should be perfectly smooth outside, towards the lower end.*

Fig. 6 represents a tube for emptying small eggs by suction. The bulb is to receive the contents of the egg and prevent them from reaching the mouth of the operator and thus causing nausea. This instrument is best made of thin glass, as thereby it can be easily kept clean. The same remark applies to this as to the last with respect to the size of the lower orifice.

A piece of thin wire (fig. 7), long enough to pass entirely through the tubes, should be always kept at hand by the operator to remove



obstructions which are likely to occur from small pieces of the embryo or half-dried yelk being accidentally drawn into the tubes or blow-pipes.

Fig. 8 represents a syringe, which will be found useful in rinsing out the inside of an egg. It may be made of any metal, though the

* In the absence of a blow-pipe, a reed, straw or grass stalk, will be found to be a tolerably efficient substitute.

pewter ones are apt, from their weight, to be clumsy. Nickel is recommended, as for the common blowpipes. The lower orifice should be as large as possible. The ring at the top should be large enough for the insertion of the operator's right thumb — as it must be remembered that he has to work it with one hand.

Figs. 9 and 10 represent scissors of shapes likely to be found very useful; fig. 9. for cutting through the bones of the embryo before it is extracted, and fig. 10 for cutting off portions of it while it is being

Fig. 13. Fig. 12. Fig. 14.

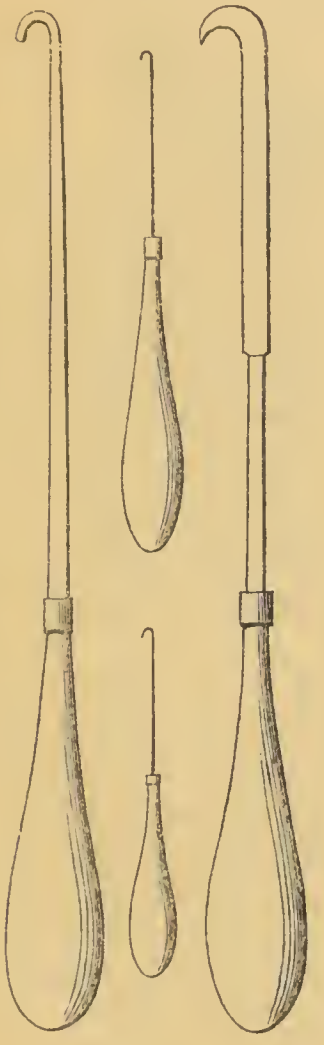
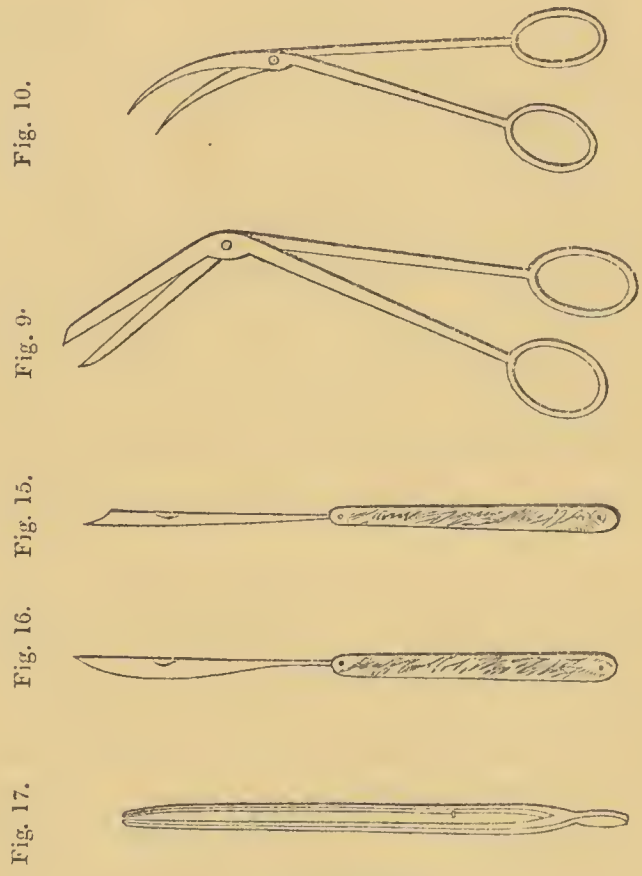


Fig. 11.
Full size.



Half size.

extracted by one of the hooks represented in figs. 11, 12 and 13, which should vary in size from that of an ordinary pin to that of stout wire. The length of their straight portions should be rather more than the diameter of the egg they are used on.

Fig. 14 represents a knife with a curved blade, somewhat like a bill-hook, and may be useful in cutting up the embryo prior to extraction.

Figs. 15 and 16 represent a penknife and scalpel with elongated blades or shafts, to admit of their being introduced into the egg to cut up the embryo. Fig. 15 is also, perhaps, the best instrument with which to remove the lining membrane from the hole. This is done by inserting the blade perpendicularly, and slightly scraping the edge of the hole as soon as it is drilled.

Fig. 17 represents a forceps for extracting the pieces of the embryo when cut up. The spring should not be too lively, as its resiliency may occasion breakage. The grasping surfaces should be roughened to prevent the pieces slipping.*

§ V.

PREPARATION OF SPECIMENS.

Eggs are emptied with the least amount of trouble at one hole,† which should be made at the side of the specimens, as shown in the annexed engravings (figs. 18 and 19), with one of the drills already described (figs. 1, 2, 3). The hole should of course be proportioned to the size of the egg and the amount of incubation it has undergone. Eggs that are hard sat upon are more easily blown by being kept a few days, but the operation must not be deferred too long or they are apt to burst violently immediately on being punctured, though this may be avoided by holding them under water while the first incision is made. The hole being drilled, the lining membrane should be cleared away

* Most, if not all, of the implements here described may be obtained of any surgical-instrument maker. I have pleasure in mentioning the name of Mr. J. Evrard, of 35, Charles Street, Middlesex Hospital, as that of the workman who for some years past has supplied several of my friends and myself. He fits up neat and convenient pocket-cases with a set of all the most useful tools for egg-blowing and bird-skinning. Mr. David Mackenzie, of 58, South Bridge, Edinburgh, I have been informed, furnishes drills, blow-pipes, &c., and at a most reasonable rate. I believe that the Smithsonian Institution of Washington will, with its usual liberality, equip any of its correspondents in America according to their requirements.

† Those who may still prefer to blow eggs by means of two holes are particularly requested not to make them at the ends of the eggs, nor at opposite sides, but on the same side (fig. 20). In this case the hole nearest the smaller end of the egg should be the smallest, and the contents blown out at the other. If the holes are made at the ends of the eggs it not only very much injures their appearance as cabinet specimens, but also prevents their exact dimensions from being ascertained accurately; and if they are made at opposite sides the extent of the "show surface" is thereby lessened.

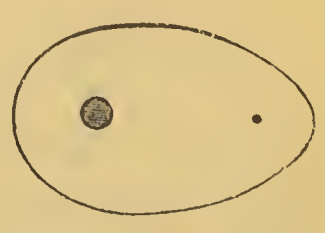


Fig. 20.

from the orifice with a penknife (fig. 15), by which means not only is the removal of the contents, but also the subsequent cleansing of the specimen, facilitated. The small end of a blowpipe (figs. 4 and 5) should then be introduced, while the other extremity is applied to the mouth, and blown through, at first very gently. If the embryo is

Fig. 18.

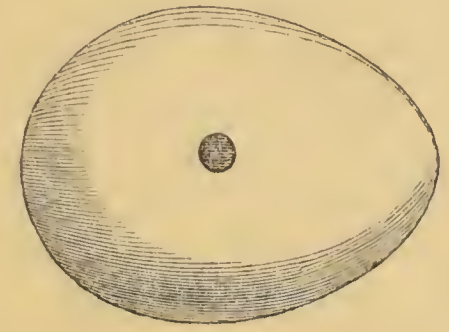
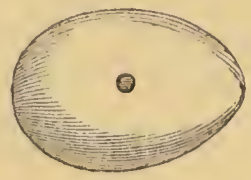


Fig. 19.



found to be moderately developed a stream of water should be introduced by means of a syringe (fig. 8), and the egg then gently shaken, after which the blowpipe may be again resorted to, until by the continued use of both instruments, aided by scissors (figs. 9 and 10), hooks (figs. 11, 12 and 13), knives (figs. 14, 15 and 16), and forceps (fig. 17), the contents are completely emptied. After this the egg should be filled with water from the syringe, gently shaken, and blown out, a process which is to be repeated until its interior is completely cleansed, when it should be laid upon a pad of blotting paper or fine cloth, with the hole downwards, its position on the pad or cloth being occasionally changed until it is perfectly dry. During this time it should be kept as much as possible from the light, especially from the sunshine, as the colours are then more liable to fade than at any subsequent time. In the case of very small eggs, when fresh the contents may be sucked out by means of a bulbed tube (fig. 6), and the interior afterwards rinsed out as before. It is always advisable, as far as possible, to avoid wetting the outside of the shell, as the action of water is apt to remove the "bloom," affect the colour, and in some cases alter the crystallization of the shell; consequently dirt stains or dung spots should never be removed. While emptying the contents it is as well to hold the egg over a basin of water to avoid breakage in case of its slipping from the fingers. Should the yelk of the egg be dried up, a small portion of carbonate of soda may be introduced (but with great care that it does not touch the outer surface of the shell, in which case the colour is likely to be affected), and then the egg filled with water

from the syringe, and left to stand a few hours with the hole uppermost, after which the contents are found to be soluble, and are easily removed by the blowpipe, assisted by one of the hooks. It is almost unnecessary to add, except for the benefit of beginners, that the manipulation of the different instruments requires extreme caution, but a few trials will give the collector the practice necessary for success. Eggs should never be written on until the shells are perfectly dry, or the ink will be found to run, and the inscription will be rendered illegible. Eggs with chalky shells, such as those of the Anis (*Crotophaga*), Gannets and Cormorants (*Pelecanidæ*), and others may be conveniently marked by incising with a pin or the point of an egg-drill, so also those of the Ptarmigans (*Lagopus*), care being taken in this case to select the dark-coloured patches to write upon. The inscriptions should always be placed on the same side as the hole or holes, and confined within the smallest limits possible. For drilling the hole or holes the side presenting the least characteristic markings should be selected.

Eggs that are very hard sat upon, of whatever size they be, should be treated in the following manner, which is a method superior to any other known at present to the writer for preventing injury arising to them. The annexed engraving (fig. 21) shows a piece of paper, a number of which when gummed on to an egg, one over the other, and left to dry, strengthen the shell in such a manner that the instruments above described can be introduced through the aperture in the middle and worked to the best advantage, and thus a fully formed embryo may be cut up, and the pieces extracted through a very moderately sized hole; the number of thicknesses required depends of course greatly upon the size of the egg, the length of time it has been incubated, and the stoutness of the shell and the paper. Five or six is the least number that it is safe to use. Each piece should be left to dry before the next is gummed on. The slits in the margin cause them to set pretty smoothly, which will be found very desirable; the aperture in the middle of each may be cut out first, or the whole series of layers may be drilled through when the hole is made in the egg. For convenience sake the papers may be prepared already gummed, and moistened when put on (in the same way that adhesive postage labels are used). Doubtless patches of linen or cotton cloth would answer equally well. When the operation is over a slight application of water (especially if

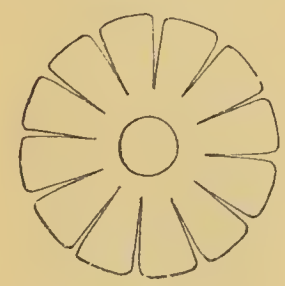


Fig. 21.

warm) through the syringe will loosen them so that they can be easily removed, and they can be separated from one another and dried to serve another time. The size represented in the sketch is that suitable for an egg of moderate dimension, such as that of a Common Fowl.

The most effectual way of adopting this method of emptying eggs is by using very many layers of thin paper and plenty of thick gum, but this is of course the most tedious. Nevertheless it is quite worth the trouble in the case of really rare specimens, and they will be none the worse for operating upon from the delay of a few days, caused by waiting for the gum to dry and harden. The naturalist to whom this method first occurred has found it answer remarkably well in every case that it has been used, from the egg of an Eagle to that of a Humming Bird, and among English Oologists it has been generally adopted.

The surest method of packing eggs so as to travel long distances and by rough modes of conveyance without receiving injury is to roll up each specimen separately in tow, flax, wool, or some similar material, so as to form a ball, and then to place these balls side by side in a good stout box, taking care that there be no room for them to shift their position. Those to whom this method may appear too troublesome are recommended first to put a layer of one of the substances just mentioned at the bottom of the box, then a layer of eggs, upon these another layer of packing material, and so on until the box is completely filled. The box should then be shaken, and if any rattling of the contents is heard additional packing material is required. More breakages occur by the use of boxes too large for the number of eggs than the contrary. As a general rule it may be stated that eggs if blown do not break against one another, but against the sides of thebox; if unblown, however, their weight renders it necessary to protect them from each other. On the other hand ,the surest method of packing eggs so that they may arrive at their journey's end broken is one which, though of course with the contrary intention, has often been recommended, *viz.*, to place them in a box, filling up the interstices between them with bran, sawdust, corn or sand. The effects of this method are in one respect diverse; if the eggs be unblown they will, after sufficient jolting, be found at the bottom, if blown at the top of the box, but in either case the result will be the same, and many be smashed. There is, perhaps, no greater annoyance to an Oologist than to receive from a correspondent a lot perhaps of valuable and carefully collected eggs broken through bad packing.

§ VI.

CONCLUDING OBSERVATIONS.

The best allies of the collector are the residents in the country, whether aboriginal or settlers, and with them he should always endeavour to cultivate a close intimacy, which may be assisted by the offer of small rewards for the discovery of nests or eggs. He should, however, always insist upon any nests found being shown to him *in situ*, and the gratuities paid should be proportioned to his success in identifying the species to which they belong. He should steadily refuse any but the most trifling remuneration for nests or eggs taken and brought to him. As a rule the eggs of the different species of Plovers and Sandpipers (*Charadriadæ* and *Scolopacidæ*) are those most wanted by Oologists of all countries. These birds mostly breed in high northern latitudes, but they often choose elevated spots for nesting in more southern parallels. Their nests are nearly always difficult to find, even when the birds are discovered. Their habit is, if the ground be at all rough with herbage, to run off the nest for some distance before taking wing as the observer approaches, if the ground be bare they will try to escape observation by squatting closely until they are almost trodden upon. The best method of finding them, and indeed the nests of some other species, is for the collector to conceal himself near the place where he has reason to believe the eggs are, and to endeavour to watch the bird as she returns to her nest—using a telescope if necessary; but should this fail, after giving her time to settle herself upon it, to fire off a gun suddenly, or spring up and shout, when the bird, in her surprise, will often at once take wing from the nest, or at least without running many yards. To reach the nests of rock-building birds a man or boy can be lowered by a rope from the top, when it is accessible. The rope should always be tied under the arms of the person lowered, as substances, detached from above by the friction of the rope, may, by falling on him, stun him for a moment, and cause him to lose his hold. But in all places and at all times an egg-collector should recollect that IDENTIFICATION and AUTHENTICATION are his main objects, to attain which no trouble is too laborious, no care too great.

It does not come within the scope of this paper to offer any remarks on the arrangement or method of exhibiting eggs in cabinets. What has been attempted is simply a series of suggestions for collectors in the field. They are especially urged to aid the study of Oology by

exercising greater zeal than many have hitherto been wont to do in seeking and recording precise information relative to the specimens they procure, and that at the very time and place when only it may be sought and recorded. It follows of necessity that such information should not be neglected by Oologists at home, but carefully entered and preserved in the catalogues of their collections, which all Oologists ought to keep. In many cases they may prefer forming these catalogues on their own plan; indeed for general collections of eggs they are obliged so to do; but to those who are content with a moderate series of the eggs of British birds only the useful 'Systematic Catalogue'* of the Rev. S. C. Malan will be found of very great convenience, though the plan recommended by that gentleman, of using tickets to distinguish the specimens instead of writing in ink on their shells, appears to the author, as has been stated above, to be liable to many grave objections. But with the simple substitution of inscriptions for tickets (which are so easily removable) Mr. Malan's method seems deserving of very great commendation, for it is the comparative indelibility of the former which gives them so great an advantage over the latter as permanent records of IDENTIFICATION and AUTHENTICATION.

* 'A Systematic Catalogue of the Eggs of British Birds,' arranged with a view to supersede the use of labels for eggs, by the Rev. S. C. Malan, M.A. London: John Van Voorst, 1, Paternoster Row. 1848. 8vo, pp. 170. Price 8*s.* 6*d.*

Printed by E. Newman, 9, Devonshire Street, Bishopsgate Street, London.

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